

THAT WHICH IS CLAIMED:

1. A multi-reel apparatus for winding a continuous travelling web onto each of a plurality of cores to form a plurality of rolls in a web manufacturing machine, comprising:

10 a web support that supports said travelling web along a path of travel that extends from a first vertical level to a second vertical level spaced vertically from the first vertical level;

vertically stacked first and second reeling stations located respectively at the first and second vertical levels, each reeling station having at least one
15 reeling device operable to hold and rotatably drive a core onto which the web is wound to form a roll, and being further operable to move the core into engagement with the web on the web support to initiate reeling of the web onto the core, and to move the core away from the web support when the roll is fully wound so that the web can begin reeling onto the core held in another reeling device.

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2. The multi-reel apparatus of claim 1, wherein the first and second reeling stations each have one reeling device whereby the web is continuously wound alternately in one reeling device of the first reeling station and then in the other reeling device of the second reeling station.

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3. The multi-reel apparatus of claim 2, further comprising a cutting device operable to sever the web when the roll in one of the reeling stations is completed such that the other reeling station begins to wind the web onto the core.

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4. The multi-reel apparatus of claim 2, wherein the web support comprises an endless clothing guided along the path of travel by a plurality of rolls about which the clothing is looped.

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5. The multi-reel apparatus of claim 4, wherein the clothing is a through-air drying fabric.

6. The multi-reel apparatus of claim 2, wherein the web support
10 comprises at least one foil.

7. The multi-reel apparatus of claim 2, further comprising an adhesive applicator positioned adjacent to the path of travel of the web upstream of the reeling stations and operable to apply adhesive to the web in response to a signal.

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8. The multi-reel apparatus of claim 7, further comprising a cutting device positioned adjacent to the path of travel of the web and operable to cut the web downstream of the applied adhesive.

9. The multi-reel apparatus of claim 2, further comprising a third
20 reeling station located at a third vertical level along the path of travel of the web.

10. The multi-reel apparatus of claim 2, wherein the web proceeds in a generally downward direction along the path of travel.

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11. The multi-reel apparatus of claim 2, wherein the web proceeds in a generally upward direction along the path of travel.

12. The multi-reel apparatus of claim 1, wherein the continuous web
30 prior to winding is divided into two partial-width web portions and wherein each reeling station includes two reeling devices for simultaneously winding the two web portions

5 whereby the web is continuously wound alternately in the first reeling station and then in the second reeling station.

13. The multi-reel apparatus of claim 1, wherein the continuous web prior to winding is divided into first and second partial-width web portions respectively wound by the first and second reeling stations and wherein each reeling station includes first and second reeling devices that are vertically stacked and aligned in a width direction of the web, whereby each web portion is continuously wound alternately in the first and then the second reeling devices of each reeling station.

14. A paper web manufacturing machine, comprising:
a wet section having a former for forming a wet paper web;
a drying section for drying the wet paper web; and
a multi-reel apparatus including a web support that supports the web along a path of travel that extends from a first vertical level to a second vertical level spaced vertically from the first vertical level and including vertically stacked first and second reeling stations located respectively at the first and second vertical levels, each reeling station having at least one reeling device operable to hold and rotatably drive a core onto which the web is wound to form a roll, and being further operable to move the core into engagement with the web on the web support to initiate reeling of the web onto the core, and to move the core away from the web support when the roll is fully wound so that the web can begin reeling onto the core held in another reeling device whereby the web.

15. The machine of claim 14, wherein the first and second reeling stations each have one reeling device whereby the web is continuously wound alternately in one reeling device of the first reeling station and then in the other reeling device of the second reeling station.

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16. The machine of claim 15, further comprising a cutting device operable to sever the web when the roll in one of the reeling stations is completed such that the other reeling station begins to wind the web onto the core.

10 17. The machine of claim 15, wherein the web support comprises an endless clothing guided along the path of travel by a plurality of rolls about which the clothing is looped.

15 18. The machine of claim 17, wherein the clothing is a through-air drying fabric.

19. The machine of claim 15, wherein the web support comprises at least one foil.

20 20. The machine of claim 15, further comprising an adhesive applicator positioned adjacent to the path of travel of the web upstream of the reeling stations and operable to apply adhesive to the web in response to a signal.

25 21. The machine of claim 20, further comprising a cutting device positioned adjacent to the path of travel of the web and operable to cut the web downstream of the applied adhesive.

22. The machine of claim 15, further comprising a third reeling station located at a third vertical level along the path of travel of the web.

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23. The machine of claim 15, wherein the web proceeds in a generally downward direction along the path of travel.

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24. The machine of claim 15, wherein the web proceeds in a generally upward direction along the path of travel.

10 25. The machine of claim 15, wherein the web support is a portion of a drying fabric on which the web is carried through at least part of the drying section.

15 26. The machine of claim 15, wherein the former is located above and supported by a main floor, the drying section includes at least one pre-dryer located below the main floor and a final dryer located above the main floor, and the web support comprises a drying fabric carrying the web through the final dryer, one of the reeling stations being located above and supported by the main floor and the other reeling station being located below the main floor.

20 27. The machine of claim 15, wherein the former is located above and supported by a main floor, the drying section includes at least one dryer located below the main floor and a dryer located above the main floor, and the web support comprises a drying fabric carrying the web through the reeling stations located below the main floor.

25 28. The machine of claim 15, wherein the former is located above and supported by a main floor, the drying section including at least one dryer located above the main floor, and the web support comprises a drying fabric carrying the web through the reeling stations located above and supported by the main floor.

30 29. The machine of claim 15, wherein the former is located above and supported by a main floor, the drying station including at least one dryer located below the main floor, and the web support comprises a drying fabric carrying the web through the reeling stations located above and supported by the main floor.

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30. The machine of claim 15, wherein a portion of the multi-reel apparatus is positioned directly above the drying section.

10 31. The machine of claim 15, wherein the reeling stations are positioned in a near vertical alignment.

15 32. The machine of claim 14, wherein the continuous web prior to winding is divided into two partial-width web portions and wherein each reeling station includes two reeling devices for simultaneously winding the two web portions whereby the web is continuously wound alternately in the first reeling station and then in the second reeling station.

20 33. The machine of claim 14, wherein the continuous web prior to winding is divided into first and second partial-width web portions respectively wound by the first and second reeling stations and wherein each reeling station includes first and second reeling devices that are vertically stacked and aligned in a width direction of the web, whereby each web portion is continuously wound alternately in the first and then the second reeling devices of each reeling station.

25 34. A method for winding a continuous travelling web sequentially onto each of a plurality of cores to form a plurality of rolls in a web manufacturing machine, comprising the steps of:

30 advancing the web, supported on a web support, along a path of travel that passes adjacent to a first reeling station at a first vertical level and a second reeling station at a second vertical level;

holding and rotatably driving a core with a reeling device in each of the reeling stations;

5 moving the core held by the reeling device at the first reeling
station into engagement with the web being directed by the web support;
winding the web onto the core held by the reeling device at the
first reeling station and thereby forming a completed roll;
moving the core and completed roll away from the web support
10 and out of engagement with the web with the reeling device at the first reeling station;
winding the web onto the core held by the reeling device at the
second reeling station; and
alternating between winding in the first and second reeling stations
so that the web is continuously wound.

15 35. The method for winding a continuous travelling web as in claim
34, further comprising the step of severing the web when the roll in one of the reeling
stations is completed such that the other reeling station begins to wind the web onto the
core.

20 36. The method for winding a continuous travelling web as in claim
35, further comprising the step of applying adhesive to the web upstream of the reeling
stations and in response to a signal.

25 37. The method for winding a continuous travelling web as in claim
34, wherein the advancing step further comprises advancing the web on an endless
clothing guided along the path of travel by a plurality of rolls about which the clothing is
looped.

30 38. The method for winding a continuous travelling web as in claim
37, wherein the advancing step comprises advancing the web on a through-air drying
fabric.

39. The method for winding a continuous travelling web as in claim 34, wherein the advancing step comprises advancing the web on at least one foil.

40. The method for winding a continuous travelling web as in claim 34, wherein there is a third reeling station and said alternating step comprises alternating between the first, second and a third reeling stations.

41. The method for winding a continuous travelling web as in claim 34, wherein the advancing step comprises advancing the web in a generally downward direction along the path of travel.

42. The method for winding a continuous travelling web as in claim 34, wherein said advancing step comprises advancing the web in a generally upward direction along the path of travel.

43. A method for winding a continuous travelling web onto each of a plurality of cores to form a plurality of small rolls in a web manufacturing machine, comprising the steps of:

dividing the web into a pair of partial-width web portions;
advancing the web portions, supported on a web support, along a path of travel that passes adjacent to a first reeling station at a first vertical level and a second reeling station at a second vertical level vertically spaced from the first vertical level;
holding and rotatably driving a pair of cores with a pair of adjacent reeling devices in each of the reeling stations;
moving the cores held by the reeling devices at the first reeling station into engagement with the two web portions on the web support;

5 winding each web portion onto a respective one of the cores held
by the reeling device at the first reeling station and thereby forming a pair of completed
small rolls;

moving the cores and completed small rolls away from the web
support and out of engagement with the web with the pair of reeling devices at the first
10 reeling station;

winding the web onto the cores held by the reeling devices at the
second reeling station; and

alternating between winding in the first and second reeling stations
so that the web is continuously wound.

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44. A method for winding a continuous travelling web onto each of a
plurality of cores to form a plurality of small rolls in a web manufacturing machine,
comprising the steps of:

dividing the web into first and second partial-width web portions;
20 advancing the first web portion, supported on a web support, along
a path of travel that passes adjacent to a first reeling station at a first vertical level and
advancing the second web portion, supported on the web support, along a path of travel
that passes adjacent to a second reeling station at a second vertical level vertically spaced
from the first vertical level; and

25 simultaneously winding the first web portion in the first reeling
station and the second web portion in the second reeling station.

45. The method for winding a continuous travelling web as in claim
44, further comprising:

30 holding and rotatably driving a pair of cores with a pair of reeling
devices vertically stacked in each of the reeling stations; and

5 alternately winding the first web portion first in one then in the other of the reeling devices of the first reeling station, and alternately winding the second web portion first in one then in the other of the reeling devices of the second reeling station.

10 46. The method for winding a continuous travelling web as in claim 45, wherein the steps of alternately winding the web portions comprise:
moving one of the cores held in the reeling devices at each reeling station into engagement with the web portion being directed to that reeling station by the web support;
winding each web portion onto the one of the cores held by the
15 reeling device at each reeling station and thereby forming a completed small roll;
moving the core and completed small roll away from the web support and out of engagement with the web;
winding the web onto the other one of the cores held by the reeling devices at each reeling station; and
20 alternating between winding onto one core and then the other core of each reeling station so that the web is continuously wound.